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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,989	12/15/2003	Somenath Mitra	436/12	4147
27538 7590 03/30/2009 GIBSON & DERNIER L.L.P. 900 ROUTE 9 NORTH SUITE 504 WOODBIDGE, NJ 07095				
EXAMINER ROBINSON, DANIEL LEON				
ART UNIT		PAPER NUMBER		
3742				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/735,989

Applicant(s)

MITRA ET AL.

Examiner

DANIEL L. ROBINSON

Art Unit

3742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 07 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 10-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 and 5 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Lin et al.(U.S.Pat.5,591,139).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Ferguson (2003/0209534).

Lin discloses substantially the claimed invention, but does not disclose quartz and borosilicate glass. Ferguson discloses resistive heating systems with a substrate

202 comprising quartz and borosilicate glass (page 10, [0068]). It would have been

obvious to one having ordinary skill in the art to modify Lin invention to include the substrate comprising quartz and borosilicate glass as taught by Ferguson in order to

provide a more rigid structure for the microheater.

As for claim 9, it would have been obvious to include a glass-insulating layer disposed on the conductor 13 because it is conventional to insulate the heater-conductor to avoid short circuitry.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Kenny (6,551,849).

Lin discloses substantially the claimed invention, but does not disclose the conductor comprising aluminum alloy and silicon.

Kenny discloses a method of fabricating arrays of microneedles-microchannels comprising electrically conductive pads 250 comprising aluminum, copper and polysilicon (col. 3, lines 15-25, col. 9, lines 15-25).

The limitation of the conductor comprising an aluminum alloy with 99% aluminum and

silicon and copper, it is deemed that the material used for conductor would be chosen

by the user in order to assure a good conductivity. Therefore it would have been obvious to make the conductor of Lin out of 99% aluminum, silicon and copper as taught by Kenny in order to obtain the good conductivity of the microheater (col. 3, lines

15-25, col. 9, lines 15-25).

Claims 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Lin in view of Yamazaki et al (6,165,876) and further in view Ueno et al (2002/00224662).

Lin discloses substantially the claimed invention, but does not disclose a substrate comprising a polished silicon wafer, and the conductor-heater comprising

boron ions. Yamazaki discloses a method of doping a silicon film 203 with boron ion

(col. 15, lines 1-18). Ueno discloses a microfluidic device having a heater 3 with a mirror- polished substrate (page 5, [0094]). It would have been obvious to one having

ordinary skill in the art to modify the Lin invention to include a doped substrate with boron ions as taught by Yamazaki and a polished substrate as taught by Ueno and a conductor comprising boron ions as taught by Yamazaki in order to improve crystallinity of the film heater-microheater (Abstract).

Response to Arguments

Applicant's arguments filed 1-7-2009 have been fully considered but they are not persuasive. Applicant's argument that the Lin reference does not show a conductor on a majority of a channel please note that Lin states paragraph 26 of the detailed description "in addition to resistors, micropumps and microvalves (neither is shown) may be incorporated onto the microneedle. For example, the resistors may also be part of a bubble-powered micropump coupled to an actuator." Applicant's argument that the Lin reference does not show micropumps please note, Heating resistors 60 may be used to form a thermally-driven, **cascaded-bubble micropump** or simple heater. The microneedle may also include detector resistors 62 which extend along the bottom of the microchannel (see FIG. 1B) and are coupled to electrodes 84 (FIG. 3L-2) on the tip 86 of the needle. Microflow channel 78 is formed by removing sacrificial layers from underneath a shell 26 during processing. In order to access the sacrificial layer, etch access holes 74 are opened and then filled

after etching. The fabrication procedures will be discussed below in relation to FIGS. 3A-1 through 3N-2.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL L. ROBINSON whose telephone number is (571)272-4788. The examiner can normally be reached on m-f 5:30-2:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu B Hoang can be reached on 571-272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

dlr

/Daniel L Robinson/

Primary Examiner, Art Unit 3742